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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/020,481

11/30/2001

Axel K. Kloth

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THOMAS, KAYDEN, HORSTEMEYER & RISLEY
100 GALLERIA PARKWAY
SUITE 1750
ATLANTA, GA 30339-5948

EXAMINER

RYMAN, DANIEL J

ART UNIT

PAPER NUMBER

2616

DATE MAILED: 07/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/020,481	Applicant(s) KLOTH, AXEL K.	
	Examiner Daniel J. Ryman	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 5, 6, 8, 13 and 15 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 9-12, 14 and 16-18 is/are rejected.
- 7) ☒ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/30/2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-4, 7, 9-12, 14, and 16-18 have been considered but are moot in view of the new ground(s) of rejection.

Specification

2. The disclosure is objected to because of the following informalities: on p. 1, line 30 "lager" should be "larger"; on p. 7, line 3 "except" should be "accept"; on p. 9, line 3 "comprises" should be "comprise"; on p. 9, line 11 "comprises" should be "comprise"; on p. 10, line 14 "card 10" should be "card"; on p. 11, line 5 "comprises of" should be "comprises"; on p. 16, line 6 "In the in the" should be "In the"; and on p. 16, line 30 "reassembly" should be "reassemble".

Appropriate correction is required.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: ref. 215 (see p. 18, lines 14-23). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not

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accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4, 7, 9-12, 14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gregorat (USPN 6,594,229) in view of Takatri et al. (USPN 5,189,668).

6. Regarding claims 1, 9, 16, and 17, Gregorat discloses a method and switching system for preventing cell loss during switch-over in a redundant switch fabric, the method comprising the steps of and the system comprising means for: receiving an inbound cell in an ingress buffer (Fig. 3 and col. 7, lines 18-22, where an inbound packet is received at an input stage, i.e. "ingress buffer"); dispatching copies of said inbound cell stored in said ingress buffer to a plurality of switch fabric elements (Fig. 3 and col. 7, lines 10-14, where the active input stage dispatches copies of the inbound packet stored in the input stage to a plurality of ID units, which, in turn, dispatch the inbound packet to a plurality of packet routers, i.e. "switch fabric elements"); receiving said cell copies in said plurality of switch fabric elements (Fig. 3 and col. 7, lines 10-14, where the packets are transmitted to the packet routers, such that the plurality of packet routers, i.e. "switch fabric elements," receive the packet copies); forwarding an outbound cell from a designated active switch fabric element to an egress buffer (Fig. 7 and col. 8, line 64-col. 9, line 3, where the active packet router forwards an outbound packet to a peripheral device, i.e.

“egress buffer,” which stores the packet); receiving a redesignation of the active switch fabric element during a switch over (col. 5, lines 40-42, where the primary routing engine switches over to the secondary routing engine upon a system command or occurrence of a failure); forwarding an outbound cell from the redesignated active fabric switch element to the egress buffer, and dispatching an outbound cell from the egress buffer (col. 5, lines 40-42, where after the secondary router becomes the active router, the secondary router will forward the packet to the peripheral device, col. 8, line 64-col. 9, line 3).

Gregorat does not expressly disclose that the inbound cells are retained in the ingress buffer after the copies of the inbound cells are forwarded to the switch fabric elements. Takatori teaches, in an switching system, storing a copy of an inbound cell in an ingress buffer after the inbound cell has been forwarded to the switch fabric in order to enable a later stage of the switch to request retransmission of the copy if the inbound cell has been lost (col. 2, lines 31-37). Takatori discloses that such a system results in a “low cell loss probability” (col. 1, lines 61-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the retransmission system of Takatori with the switching system of Gregorat to arrive at a switching system that retains in the ingress buffer the inbound cell after the copies of the inbound cells are forwarded to the switch fabric elements. One of ordinary skill in the art at the time of the invention would have been motivated to do this in order to obtain a switching system that had a low cell loss probability.

7. Regarding claims 2 and 10, Gregorat in view of Takatori discloses that the step of receiving an inbound cell into an ingress buffer comprises the steps of: receiving a datagram from a physical interface (Gregorat: Fig. 3, where the datagram is received from an external

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source) and segmenting the datagram into at least one cell (Gregorat: col. 6, lines 21-28, where a routing engine will generate “child” data packets from a “parent” data packet). Gregorat in view of Takatori fails to disclose forwarding the cell to the ingress buffer since Gregorat in view of Takatori discloses that the segmentation occurs in the routing engine (Gregorat: col. 6, lines 21-25). However, Gregorat in view of Takatori also discloses that when performing segmentation in the routing engine, the routing engine will either return the packets to the ID unit to receive a unique ID or generate the unique ID itself (Gregorat: col. 6, lines 25-28). In addition, Gregorat in view of Takatori discloses that the packets received at the ingress buffer were segmented by an external user (Gregorat: col. 5, lines 14-16), where such packets are processed sequentially through the switch (see Gregorat: Fig. 3). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to segment the datagram into at least one cell after receiving the datagram from a physical interface but before forwarding the cell to the ingress buffer since this ensures that each packet is sequentially processed by the switch such that a packet will not either have to be returned to the ID unit or further processed in the routing engine.

8. Regarding claims 3 and 11, Gregorat in view of Takatori does not expressly disclose attaching a cell sequence number to said cell and then storing the sequence number in the ingress buffer. However, as outlined in the rejection of claims 2 and 10, Gregorat in view of Takatori does suggest segmenting a datagram into a plurality of cells and then storing these cells in the ingress buffer. Gregorat in view of Takatori also discloses, when segmenting a datagram into smaller packets, attaching a sequence number to each of the packets (Gregorat: col. 5, lines 14-20). Examiner takes official notice that sequence numbers are well known in the art as a

mechanism for aiding in the reconstruction of the datagram. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to attach a cell sequence number to said cell and then store the sequence number in the ingress buffer in order to aid the system in reconstructing the parent packet.

9. Regarding claims 4 and 12, Gregorat in view of Takatori discloses that the step of dispatching copies of the inbound cell stored in the ingress buffer to a plurality of switch fabric elements comprises the steps of: selecting said inbound cell from the ingress buffer (Gregorat: Fig. 3 and col. 7, lines 10-14, where it is implicit that a cell is selected for transmission through the switch); replicating said cell into a plurality of copies (Gregorat: Fig. 3 and col. 7, lines 10-14, where a single input stage transmits copies of the same packet to multiple ID units, such that a single cell is replicated into a plurality of copies); and sending said cell copies to a plurality of switch fabric elements (Gregorat: Fig. 3 and col. 7, lines 10-14, where these multiple copies are transmitted to the routing elements).

10. Regarding claims 7 and 14, Gregorat in view of Takatori does not expressly disclose that the step of dispatching an outbound cell from the egress buffer further comprises the steps of: selecting a plurality of outbound cells from the egress buffer; reassembling said outbound cells into a datagram; and conveying the datagram to a physical interface, thereby dispatching an outbound cell from the egress buffer. However, Gregorat in view of Takatori does disclose segmenting a datagram into a plurality of cells (Gregorat: col. 6, lines 21-28, where a routing engine will generate "child" data packets, i.e. "cells" from a "parent" data packet, i.e. "datagram"). Gregorat in view of Takatori further discloses that the packets are processed in the peripheral, i.e. the egress buffer, before being transmitted to an external interface (Gregorat: col.

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8, line 64-col. 9, line 3, where the peripheral removes the packet ID before transferring the packet to an external output). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to reassemble the outbound cells into a datagram before transferring the datagram to a physical interface since this ensures that the data sent from the switch is identical to the data received by the switch, i.e. this avoids having datagrams enter the switch but cells leave the switch.

11. Regarding claim 18, Gregorat in view of Takatori discloses an input network processor that, upon receiving a command, will cause a retransmission of at least one cell to the switch fabric elements from the ingress buffer (Takatori: col. 2, lines 31-37, where, upon receiving a retransmission request signal, the ingress buffer will retransmit a particular cell). While Gregorat in view of Takatori does not expressly disclose adjusting a read pointer to the ingress buffer in order to retransmit the cell, Examiner takes official notice that it was well known in the art at the time of the invention to select a particular piece of data in a buffer through a read pointer since a read pointer directs a controller to read a particular part of the buffer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust a read pointer to the ingress buffer in order to retransmit the cell since this will select the particular part of the buffer in which the cell resides.

Allowable Subject Matter

12. Claims 5, 6 and 13 are allowed. The prior art does not disclose or fairly suggest determining whether there is a gap or an overlap in the contents of the egress buffer relative to a cell stream arriving from a newly designated active switch fabric element; if there is an overlap in the egress buffer, adjusting a read pointer for the egress buffer to accommodate the overlap;

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and if there is a gap in the egress buffer, dispatching a cell from the ingress buffer so as to send copies of the cell to the plurality of switch fabric elements again to prevent the loss of the cell.

13. Claims 8 and 15 are allowed. The prior art does not disclose or fairly suggest storing the outbound cell into a storage element wherein the storage element is selected according to the datagram that it is assigned to, the priority level of the cell and the destination router port. Simply, while the prior art discloses using a plurality of reassembly buffers to reassemble multiple datagrams, it fails to disclose selecting a particular buffer according to the datagram the cell was assigned to, the priority level of the cell, and the destination router port. See Delp et al. (USPN 6,667,978), Fig. 5.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJR

Daniel J Ryman
Examiner
Art Unit 2616


HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600